

Forest Health Protection

Pacific Southwest Region



Date: November 11, 2003
File Code: 3420

To: District Ranger, Eagle Lake Ranger District, Lassen National Forest

Subject: Forest Insect and Disease Evaluation of Stand 14,
Hamilton Management Area (NE03-09)

At the request of Susan Wilcox, Silviculturist, I conducted a field evaluation of Stand 14, her silvicultural certification stand, within the Hamilton Management Area on October 30, 2003. The objective of my visit was to evaluate the current forest health conditions within the stand, discuss what influence these conditions would have on stand management objectives and provide recommendations as appropriate.

Background

Stand 14 is located on the Lassen National Forest, about 10 miles west of Susanville, within the boundaries of a furbearer management area and a proposed defensive fuel profile zone (DFPZ). The elevation of the site is approximately 6600 feet with precipitation averaging from 25 to 30" inches per year. The Dunning site class is III. The 64-acre stand is dominated by white fir (*Abies concolor*) with lesser amounts of Jeffrey pine (*Pinus jeffreyi*) and ponderosa pine (*Pinus ponderosa*). Incense cedar (*Libocedrus decurrens*), Douglas-fir (*Psuedotsuga menziesii*) and sugar pine (*Pinus lambertiana*) are also present but sparse. The oldest and largest trees in the stand are ponderosa and Jeffrey pine while the white fir component is relatively young, having mostly established over the last 100 years. The increased presence of white fir within the stand

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has led to the current average basal area of 231 square feet/acre, which is believed to be much greater than what would have been on site without the exclusion of fire. The only management activities that have occurred on this site over the last 30 years are limited entries for salvage purposes.

Observations

Many white fir trees, representing all ages and size classes, within the stand are currently being attacked and killed by the fir engraver beetle (*Scolytus ventralis*). In some less severe cases, the results of the attacks are top kill or individual branch dieback. No signs of annosus root disease (*Heterobasidion annosum*) were observed in these trees or in the stumps created by past salvage harvesting.

Jeffrey, ponderosa, and sugar pine, as well as incense cedar, appear to be relatively healthy when compared to the white fir. Although no current bark beetle attacks were observed in trees of these species, snags, downed trees and stumps still remain from past bark beetle outbreaks (mainly from the drought of 1987-1992).

Western dwarf mistletoe (*Arceuthobium campylopodum*) and elythroderma disease (*Elythroderma deformans*) in Jeffrey pine were also observed in the stand. Neither of these was present at levels enough to cause concern.

Discussion and Recommendations

The high level of white fir mortality occurring in this stand is likely a result of high stand density, prolonged drought, and possibly annosus root disease. These factors compromise tree health and vigor making them more susceptible to fir engraver beetle attacks. In addition, the average annual precipitation of 25 to 30" for this site is below what is generally required to sustain this species over a generation. Therefore, even with lower stocking levels, white fir growing on this site is at a higher risk for engraver beetle related mortality.

Jeffrey and ponderosa pine within the stand appear healthy but bark beetle related mortality for these species has been increasing in the area over the past two years and it is likely to occur here under current stand conditions. High stand density combined with the last prolonged drought negatively impacted both Jeffrey and ponderosa pine on this site as evidenced by the presence of many snags and downed logs containing bark beetle galleries. In addition, stumps present within the stand were the result of salvage logging of bark beetle killed trees.

The recommended prescription of thinning from below to a stand density well below the "normal" stocking levels (in accordance with DFPZ specifications) should effectively reduce tree competition for limited water and nutrients. Furthermore, selecting for more drought tolerant species such as ponderosa and Jeffrey pine over white fir will help bring the stand back into its natural range of variability, thus making it more resilient to disturbance agents such as insects, disease, and fire. When carrying out thinning treatments, it is recommended that a registered borate compound be applied to all freshly cut stumps >8" dbh. This will reduce the chance of successful colonization of stumps by spores of *Heterobasidion annosum*.

Lat 40.31696 Lon -120.85171

Forest Health Protection can assist with the funding for thinning and removing material from overstocked areas within and adjacent to Stand 14. If you are interested in this funding please contact any of the Forest Health Protection entomology staff for assistance in developing and submitting a proposal.

If you have any questions regarding this report and/or need additional information please contact me at 530-252-6431 or at dcluck@fs.fed.us.

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cc: Susan Wilcox, Eagle Lake RD
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